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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,574	07/31/2003	Russell W. Gruhlke	10030719-1	5020

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AGILENT TECHNOLOGIES, INC.
Intellectual Property Administration
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EXAMINER

YAM, STEPHEN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 08/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/632,574

Applicant(s)

GRUHLKE ET AL

Examiner

Stephen Yam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
 Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 0703.
- 4) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “280” has been used to designate both a lens (Fig. 2d) and a light beam (Fig. 2b, 3a). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 281 (Fig. 2c), 285, 295 (Fig. 2d). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not

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accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to because it is unclear whether the reference number referring to the top section in Fig. 2c is "232" or "233", as both reference numbers are recited in Page 8 of the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after

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the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:

The blanks in Page 2, line 34 and Page 10, line 16 of the specification should be updated.

Appropriate correction is required.

Claim Objections

6. Claims 6, 8, 15, and 18 are objected to because of the following informalities:

In Claim 6, "said first source" lacks proper antecedent basis.

In Claim 8, "said detector" lacks proper antecedent basis.

In Claim 15, "at position" should be replaced with "positioned" for proper grammar.

In Claim 18, "collection lens" should be replaced with "a collection lens" for proper grammar.

In Claim 18, "said detector" lacks proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 11 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsunekuni et al. US Patent No. 4,712,100.

Regarding Claim 11, Tsunekuni et al. teach (see Fig. 3) an optical navigation system comprising a coherent source (5, 9, 6) (using a single light source- see Col. 3, lines 19-22) for providing a first portion ("A") of a beam comprising a first wavelength (since all light beams have a wavelength property) and a second portion ("B") of a beam comprising a second wavelength (since all light beams have a wavelength property) onto a target surface ("b"), a first detector (10) for receiving a first reflection (reflection of "A") of said first portion of said beam from said target surface (see Fig. 3), and a second detector (14) for receiving a second reflection (reflection of "B") of said second portion of said beam from said target surface (see Fig. 3) to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors in response to said first and said second reflections (see Abstract and Col. 3, lines 61-65).

Regarding Claim 17, Tsunekuni et al. teach a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection (see Col. 6, lines 9-14).

9. Claims 21, 23, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Piot et al. US Patent No. 6,256,016.

Regarding Claim 21, Piot et al. teach (see Fig. 3) an optical navigation system comprising a coherent source (250) (see Col. 7, lines 3-4) for providing a light beam (305) incident onto a target surface (120), a first detector (320a) for receiving a first portion of a reflection (see Col. 7, lines 27-30) of said light beam from said target surface, and a second detector (320b) for receiving a second portion of said reflection of said light beam from said target surface to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors in response to said first and said second portions of said reflections (see Abstract).

Regarding Claim 23, Piot et al. teach an aperture (330b) (see Col. 13, lines 62-65) positioned between said second detector and said target surface to limit the field of view of said second detector.

Regarding Claim 24, Piot et al. teach said first detector as a correlation detector (see Fig. 6).

10. Claims 1, 5, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Boillot et al. US Patent No. 6,730,926.

Regarding Claim 1, Boillot et al. teach (see Fig. 1) an optical navigation system comprising a light source (20) for providing a light beam having a first wavelength (since all light beams have a wavelength property) incident onto a target surface (30), a coherent source (16) for providing a divergent beam (stripe pattern) (see Col. 3, lines 21-23 and Col. 5, lines 32-33) having a second wavelength (since all light beams have a wavelength property) incident onto said target surface (see Fig. 1), a first detector (13) for receiving a first reflection of said light

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beam from said target surface (see Col. 3, lines 6-14), and a second detector (14) for receiving a second reflection of said divergent beam from said target surface (see Col. 3, lines 17-18, 41-45) to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors in response to said first and said second reflections (see Col. 6, lines 15-17).

Regarding Claim 5, Boillot et al. teach a focusing lens positioned between said coherent source and said target surface (when converging light is used, since laser light is converged using a focusing lens- see Col. 7, lines 32-34).

Regarding Claim 8, Boillot et al. teach a collection lens disposed between said target surface and said second detector to increase the collection efficiency of said second reflection.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al.

Regarding Claim 3, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. also teach the coherent source comprising a laser (see Col. 3, lines 17-18). Boillot et al. do not teach the coherent source as a VCSEL (vertical cavity

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surface emitting laser). It is well known in the art to use a VCSEL for a laser source, as the component is easily obtainable. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a VCSEL for the coherent source of Boillot et al., to use standard components to save manufacturing and design time.

Regarding Claim 4, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach a wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection. It is well known in the art to provide wavelength filters for light sources and detectors, to reduce extraneous radiation outside a desired wavelength range for a more precise measurement and imaging. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection, in the system of Boillot et al., to reduce noise from undesired light radiation for increased detection contrast.

Regarding Claim 6, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach a collimating lens positioned between the light source and said target surface. It is well known in the art to provide collimated light for general illumination by using a collimating lens, to reduce noise patterns for light detection caused by non-uniform or overlapping illumination. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a collimating lens positioned between the light source and the target surface, in the system of Boillot et al., to provide uniform illumination to provide more accurate detection by the first detector.

13. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al. in view of Piot et al.

Regarding Claims 2 and 9, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach the second reflection comprised of a speckle pattern or a third detector to receive the second reflection. Piot et al. teach (see Fig. 3) a similar system with a coherent light source (250) for providing a divergent beam (see Col. 7, lines 30-33), a second detector (320a) for receiving a reflection of the divergent beam, and a third detector (320b) for receiving the reflection of the divergent beam, with the second reflection comprised of a speckle pattern (see Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the second reflection comprised of a speckle pattern and a third detector to receive the second reflection, as taught by Piot et al., in the system of Boillot et al., to provide enhanced sensitivity and precision for detecting X-Y position changes.

14. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al. in view of Tsunekuni et al.

Regarding Claim 7, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection. Tsunekuni et al. teach (see Fig. 3) a similar system, with a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection

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(see Col. 6, lines 9-14 and above paragraphs of rejection of Claims 11 and 17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection, as taught by Tsunekuni et al., in the system of Boillot et al., to provide increased light transmission to the detector and improved versatility in the placement of the detector, taught by Tsunekuni et al. (see Col. 6, lines 9-14).

15. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al. in view of Dandliker et al. US Patent No. 5,907,152.

Regarding Claim 10, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach said second detector comprising detector strips alternating with non detector strips. Dandliker et al. teach (see Fig. 1 and 3A) a similar system with a detector comprising detector strips alternating with non detector strips (see Fig. 2A, 3A) for detecting position. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a detector comprising detector strips alternating with non detector strips, as taught by Dandliker et al., in the system of Boillot et al., to provide more sensitive detection of movement by using speckle analysis, as taught by Dankliker et al.

16. Claims 12, 13, 15, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunekuni et al.

Regarding Claims 12 and 19, Tsunekuni et al. teach the system in Claim 11, according to the appropriate paragraph above. Tsunekuni et al. do not teach a first and a second narrowband

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wavelength filter to produce said first and said second portions of said beam or a third narrowband wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection. It is well known in the art to provide narrowband wavelength filters for light sources and detectors, to reduce extraneous radiation outside a desired wavelength range for a more precise measurement and imaging. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a first and a second narrowband wavelength filter to produce said first and said second portions of said beam and a third narrowband wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection, in the system of Tsunekuni et al., to reduce noise from undesired light radiation for increased detection contrast.

Regarding Claim 13, Tsunekuni et al. teach the system in Claim 11, according to the appropriate paragraph above. Tsunekuni et al. also teach the coherent source comprising a laser (see Col. 3, lines 17-19). Tsunekuni et al. do not teach the coherent source as a VCSEL (vertical cavity surface emitting laser). It is well known in the art to use a VCSEL for a laser source, as the component is easily obtainable. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a VCSEL for the coherent source of Tsunekuni et al., to use standard components to save manufacturing and design time.

Regarding Claims 15 and 16, Tsunekuni et al. teach the system in Claim 11, according to the appropriate paragraph above. Tsunekuni et al. do not teach a focusing lens operable to focus said second portion of said beam at position between said coherent source and said target surface or a collimating lens operable to collimate said first portion of said beam. It is well known in the

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art to use focusing or condensing lens for a light source, to condense or collimate the light for a precise laser pattern. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a focusing lens operable to focus said second portion of said beam at position between said coherent source and said target surface, or a collimating lens operable to collimate said first portion of said beam, in the system of Tsunekuni et al., to provide a clear laser pattern for more accurate laser detection.

17. Claims 14, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunekuni et al. in view of Piot et al.

Regarding Claims 14, 18, and 20, Tsunekuni et al. teach the system in Claim 11, according to the appropriate paragraph above. Tsunekuni et al. do not teach the second reflection comprised of a speckle pattern, a collection lens disposed between said target surface and said second detector to increase the collection efficiency of said second reflection, or a third detector to receive the second reflection. Piot et al. teach (see Fig. 3) a similar system with a coherent light source (250) for providing a divergent beam (see Col. 7, lines 30-33), a second detector (320a) for receiving a reflection of the divergent beam, and a third detector (320b) for receiving the reflection of the divergent beam, with the second reflection comprised of a speckle pattern (see Abstract) and a collection lens (315b) disposed between said target surface and said second detector to increase the collection efficiency of said second reflection. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the second reflection comprised of a speckle pattern, with a collection lens disposed between said target surface and said second detector to increase the collection efficiency of said second

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reflection, and a third detector to receive the second reflection, as taught by Piot et al., in the system of Tsunekuni et al., to provide enhanced sensitivity and precision for detecting X-Y position changes.

18. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Piot et al.

Regarding Claim 22, Piot et al. teaches the system in Claim 21, according to the appropriate paragraph above. Piot et al. do not teach said coherent source positioned at an angle between five and twenty degrees with respect to said target surface. It is well known in the art to adjust the placement and direction of a component in a system as appropriate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the coherent source positioned at an angle between five and twenty degrees with respect to said target surface, in the system of Piot et al., since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SY

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THANH X. LUU
PATENT EXAMINER